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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/241,851 02/02/99 NAKAI

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NEW YORK NY 10112

EXAMINER

CHANG, A ART UNIT	PAPER NUMBER
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2872

DATE MAILED:

01/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/241,851

Applicant(s)

NAKAI, TAKEHIKO

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2000.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Remark

1. This Office Action is in response to applicant's amendment filed on November 3, 2000 which has been entered as paper number 11.
2. By this amendment, the applicant has amended claims 1-7, 9-12, 18 and 19. Claims 1-7 and 9-19 remain pending in this application.
3. The rejections to claims 1-7 and 9-19 under 35 USC 112, second paragraph, set forth in the previous Office Action dated May 3, 2000 are withdrawn in response to applicant's amendment.

Response to Amendment

4. The amendment filed on November 3, 2000 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: claims 1-7 and 9-12 have been amended to include the feature concerning the maximum optical path length difference in the pair of the diffraction gratings with respect to at least two wavelengths is "m (integer) times the wavelength and the value of m in the two wavelengths are the same". The specification only gives a support to have the maximum optical path difference equals to an integer m times a design wavelength (λ_0), (please see the specification page 16, equation 2), but not to two wavelengths with the same integer m.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-7, and 9-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection base on the added new matters are set forth in the previous paragraph. The specification also fails to teach adequately as to how mathematically possible for this condition to hold for two wavelengths.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18 and 19 have been amended to include phrases "said portions" and "the chamfered shape" that appear to be vague and indefinite since they lack proper antecedent basis from their respective base claims. The applicant is respectfully noted that the phrase "the chamfered shape" is not defined in claims 2-3. Clarifications are required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Gerritsen et al.

The reasons for rejection are set forth in the previous Office Action dated May 3, 2000. Claims 1, 11 and 12 have been amended to include the additional feature concerning the maximum optical path length difference for the pair of gratings with respect to at least two wavelengths "is m (integer) times the wavelength with the values m in the two wavelengths are the same". Gerritsen et al does not teach such feature explicitly however this feature is either inherently met by the disclosure or an obvious modification to one skilled in the art. Since in order for the pair of gratings disclosed by Gerritsen et al to produce diffraction effect, the optical path length difference created by the pair of gratings must equal to a value between zero and an integer times the design wavelength with the integer times the design wavelength being the maximum value. This integer is known in the art as the diffraction order and it is known in the art that the maximum optical path length difference corresponds to a total construction interference, which gives maximum diffraction efficiency. It is further known in the art that for any laminated diffraction grating pair, the optical path length difference is defined as $(n_1 - 1) * d_1 \mp (n_2 - 1) * d_2$, with n_1 and n_2 denote the index of refraction for the materials of the two gratings and d_1 and d_2 denote the thickness of grating pair, respectively. The condition for the maximum diffraction efficiency to occur at a diffraction order m is for the optical path length difference equals to m times the design wavelength, where m could be any integer including zero. If one desires to have maximum diffraction efficiency for zeroth order then the maximum optical path length difference would equal m (which is zero) times design wavelength where the design wavelength could be any wavelength with m being the same. Furthermore, the design wavelength used for designing the diffraction effect usually is referred to a range of wavelength

values around the design wavelength that has the maximum diffraction effect. This means that the diffraction condition designed base on the design wavelength is also good for wavelength values within the range of the design wavelength. This implies that the maximum optical path length difference for a particular diffraction order m is essential the same for at least two different wavelength values near the design wavelength. The newly added feature is therefore either inherently met by the disclosure of Gerritsen et al reference or an obvious modification to one of ordinary skill in the art since it is merely a matter of obvious design choice.

11. Claims 2-7 and 9-10 and claims 13-19 dependent therefrom any of the claims 2-7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Gerritsen et al in view of the patent issued to Sakai et al.

The reasons for rejection are set forth in the previous Office Action dated May 3, 2000. Claims 2-7 and 9-10 have been amended to add the additional feature concerning the maximum optical path length difference for the pair of gratings with respect to at least two wavelengths "is m (integer) times the wavelength with the values m in the two wavelengths are the same". This feature is the same as in claims 1, 11 and 12 and they are rejected for the same reasons as stated in claims 1, 11, and 12 above.

Claims 18 and 19 have also been amended to include a lens system. Although these reference does not teach explicitly that the diffraction grating or diffractive structure is used in an optical system with a lens system however such application is extremely well known in the art. For it is known in the art that a diffractive structure has the benefit of correcting aberration in a lens system. Such modification would therefore have been obvious to one having ordinary skill in the art.

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12. Claims 13-17 that are dependent from either one of claims 1, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Gerritsen et al.

The reasons for rejection are set forth in the previous Office Action dated May 3, 2000 and paragraph above for claims 1, 11 and 12.

Response to Arguments

13. Applicant's arguments with respect to claims 1-7 and 9-19 have been considered but are moot in view of the new ground(s) of rejection. The newly added features to the claims have been fully considered and they are rejected for the reasons stated above.

Applicant's arguments are mainly drawn to the newly added features to the claims and they have been addressed in the paragraphs above.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

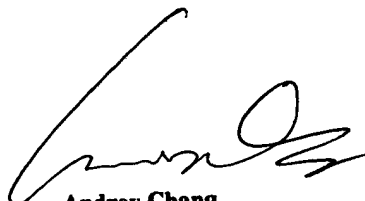
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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A. Chang
January 5, 2001



Audrey Chang
Primary Examiner
Technology Center 2800